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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,559	09/22/2003	Ralf Zuber	Umicore 0117-US	2910

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EXAMINER	
APICELLA, KARIE O	

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1726	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/668,559	ZUBER ET AL.	
	Examiner	Art Unit	
	Karie O'Neill Apicella	1726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) *7,8,11 and 12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9,10 and 13-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 29, 2010, has been entered.

2. Claim 1 has been amended. Claims 7, 8, 11 and 12 have been withdrawn from consideration as being drawn to a non-elected invention. Claim 15 has been added as new. Therefore, Claims 1-6, 9-10 and 13-15 are pending in this office action.

3. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on January 29, 2010.

Claim Rejections - 35 USC § 112

4. The rejection of Claims 1-6, 9-10 and 13-14 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, has been overcome based on the amendment to the claim.

5. The rejection of Claims 1-6, 9-10 and 13-14 under 35 U.S.C. 112, second paragraph, has been overcome based on the amendment to the claim.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 15 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim limitation "wherein said membrane does not contain a carbon-based substrate" is not properly supported in the specification.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A single claim which claims both a product and the method of using the product is indefinite under 35 U.S.C. 112, second paragraph (IPXL Holdings v. Amazon.com, Inc. 430 F.2d 1377, 1384, 77 USPQ2d 1140, 1145 (Fed. Cir. 2005); Ex parte Lyell, 17 USPQ2d 1548 (Bd. pat. App. & Inter. 1990); MPEP 2173.05(p)(11).

Furthermore, because Claims 1 and 9 recite specified products, and Claims 13 and 14 recite a method of using the product claimed in Claims 1 and 9, Claims 13 and 14 are not proper dependent claims since it is conceivable that the product of Claims 1 and 9 can be infringed without infringing the base method of using claims if the product can be used by a method other than that recited in the base method claims (MPEP 608.01(n)).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-3, 5-6, 13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Steck (EP 0586461 B1).

With regard to Claims 1 and 13, Steck discloses in Figure 4, a catalyst-coated membrane with a protective film layer, called a gasket, for use in a solid polymer electrolyte fuel cell, comprising:

(a) a catalyst-coated ionomer membrane (16), consisting essentially of an anode (18) having a catalyst layer applied to the surface of the anode which faces and attaches to the ionomer membrane (16), an ionomer membrane (16), and a cathode (20) having a catalyst layer applied to the surface of the cathode which faces and attaches to the ionomer membrane (16) (page 2, lines 16-19), wherein

said ionomer membrane comprises two surfaces (page 2 lines 13-15) and each of said two surfaces is comprised of:

(i) an active area, wherein said active area is coated with said anode or cathode catalyst layer when the anode electrode and cathode electrode are attached to the ionomer membrane by the surface containing the catalyst (page 2, lines 16-19), and

(ii) a passive area which extends beyond the electrochemically active region (page 2 lines 27-30); and

(b) at least one layer of protective film, or a gasket (12, 14), attached to each of the two surfaces of said catalyst-coated ionomer membrane (16) (page 4 lines 45-46), wherein said at least one layer of protective film (12, 14) overlaps the passive area and the active area of each surface and wherein the protective film (12, 14) is in contact with, at the very least on the peripheral edge portion, said anode or cathode catalyst layer so that a layer sequence of membrane-catalyst layer-protective film (gasket) is formed in a region of each active area (See Figure 4 and page 5 lines 29-36).

The phrase "wherein said active area is coated with" is a process term in a product claim. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious

from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *See MPEP 2113.* The prior art teaches a layer, as noted.

With regard to Claim 2, Steck discloses in Figure 4, wherein the passive area (16b) forms a perimeter around said active area (18, 20) (page 3 lines 52-57 and page 5 lines 29-36).

With regard to Claim 3, Steck discloses wherein 86% of the membrane is utilized as a cation exchange site with catalyst coating, and the region of the passive area that is overlapped by the protective layer is about 100%, as can be seen in any of Figures 3-6 wherein the active area is that which is covered by the catalyzed electrode (18, 20) (page 6 lines 11-15).

With regard to Claim 5, Steck discloses wherein the organic polymer material comprises a non-hydrophilic thermoplastic elastomeric material (page 3 line 36), including a butadiene/styrene copolymer and ethylene/propylene copolymer (page 5 lines 12-15).

With regard to Claim 6, Steck discloses wherein the ionomer membrane comprises a substance selected from the group consisting of a solid polymer ion exchange membrane, typically a porous, sulfonated material (page 3 lines 35-36).

With regard to Claim 15, Steck discloses an ionomer membrane which is preferably a solid polymer ion exchange membrane, typically a porous, sulfonated material (page 3, lines 34-36), and in which said membrane does not contain a carbon-based substrate.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 4, 9-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steck (EP 0586461 B1), as applied to Claims 1-3, 5-6, 13 and 15 above, and in further view of Fukuoka et al. (JP 10-154521).

Steck discloses the catalyst coated membrane in paragraph 11 above, but does not disclose wherein at least one layer of protective film comprises an organic polymer with a thickness in the range of 10 to 150 microns, at least one gas diffusion layer, wherein said at least one gas diffusion layer covers at least a portion of the active area of said catalyst-coated membrane and contacts, overlaps and/or penetrates the at least one layer of protective film of the catalyst-coated membrane, and wherein the region of the gas diffusion layer contacted by the at least one layer of protective film is in the range of 0.5 to 50% of the total area of the gas diffusion layer.

Fukuoka et al., however, discloses in Drawings 1-4, a polymer fuel cell comprising an ionomer membrane (1), a catalyst layer (2) formed on both sides of the ionomer membrane to form an active layer, a gas diffusion layer (3) covering at least a portion of the catalyst active layer (2), and a protective film, called a reinforcing film (7), having a frame shape arranged on one or both sides of the catalyst layer (2) and the

gas diffusion layer (3) (paragraphs 0018-0020). The protective film, or reinforcing film (7), is made of a fluororesin and has a thickness of 50 micrometers (paragraph 0026). The protective film also has a size of 45mmx45mm, and the inner circumference of the reinforcing film (7) might lap with the periphery section of the catalyst layer (2) by about 5mm (paragraph 0029 and Drawing 4), and as can be seen in the drawings, the region of the gas diffusion layer contacted by the protective film (7) is in a range of 0.5 to 50% of the total area of the gas diffusion layer (3).

Based on the teachings of these references, it would have been obvious at the time of the invention to use a gas diffusion layer which covers at least a portion of a catalyst layer and makes contact with a protective film having a thickness of 50 mm as part of the catalyst coated membrane of Steck, because Fukuoka teaches the protective film prevents breakage of the membrane without decreasing the effective area of an electrode and membrane, prevents breakage of the protective film at the time of assembly and creates a seal (paragraph 0015), as well as, the gas diffusion layer facilitates proper humidification of the membrane of the fuel cell (paragraph 0017). Further, Fukuoka et al. discloses that the gas diffusion layer will allow for the reactants to diffuse to the catalyst layers to generate electricity.

Response to Arguments

14. Applicant's arguments filed July 29, 2010, have been fully considered but they are not persuasive.

Applicant argues that Steck does not disclose the subject invention as set forth in the amended claim that states, "a catalyst-coated membrane with a protective film layer, wherein the protective film is in direct contact with said anode or cathode catalyst layer on the membrane so that a layer sequence of membrane-catalyst layer-protective film is formed in a region of each active area." Applicant goes on to argue that the amended claim now requires that the "protective film be in direct contact with the catalyst layer" and referring to Figure 4 of Steck, "the gaskets (or protective film) 12 and 14 are never in direct contact with the catalyst layers, as there is a carbon-based backing in between".

Applicant's argument is not persuasive. The claim language as amended does not require that the "protective film be in *direct contact* with the catalyst layer". The claim language simply states, "wherein the protective film is in contact with said anode or cathode catalyst layer". Steck discloses this claim limitation, as can be seen at least in Figure 4, where the gasket (12, 14) makes contact on the top portion (18c, 20c) of the catalyst containing electrode (18, 20) and at the peripheral edge portion (18b, 20b) of the catalyst containing electrode which would make contact with a peripheral edge portion of the applied catalyst layer, at the very least. Also, Applicants statement that the "gaskets *are never in direct contact* with the catalyst layers" is not persuasive. As stated before, the gasket (12, 14) makes contact on the top portion (18c, 20c) of the catalyst containing electrode (18, 20) and at the peripheral edge portion (18b, 20b) of the catalyst containing electrode which would make contact with a peripheral edge portion of the applied catalyst layer, at the very least.

Applicant argues, "amended claim 1 also now requires that a certain sequence of layers be present at the active area: membrane-catalyst layer-protective film. The structure of Steck does not meet this requirement either. The sequence of layers in the Steck structure is membrane-catalyst layer-carbon based substrate-protective film."

Applicant's argument is not persuasive. The claim language is written so as not exclude the presence of a carbon-based substrate in the sequence of layers since the language is not "consisting essentially of". As such, Steck still discloses the sequence of layers as membrane-catalyst layer-protective film. This can be seen in Figure 4 particularly, as ionomer membrane (16)-catalyst containing electrode (18, 20)-gasket (12, 14). Also, the gasket (12, 14) makes contact, at the very least, with the peripheral edge portion (18b, 20b) of the catalyst layer on the containing electrode (18, 20) and the membrane (16).

Applicant argues that, “since secondary reference Fukuoka also fails to disclose the requirements that the protective film be in contact with the catalyst layer or that the layer sequence membrane-catalyst layer-protective film exist at the active area, amended claim 1 is not rendered obvious by Steck, either alone or in combination with Fukuoka, and is patentable over these references."

Applicant’s argument is not persuasive. Steck discloses the requirements that the protective film be in contact with the catalyst layer or that the layer sequence membrane-catalyst layer-protective film exist at the active area. Fukuoka is not relied upon to teach these claim limitations. The rejection of record is proper.

Finally, Applicant's argument with regard to newly added Claim 15 has been addressed in paragraph 11 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill Apicella whose telephone number is (571) 272-8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Karie O'Neill Apicella/
Examiner
Art Unit 1726

KOA